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Misinformation of Mental Health on Social Media and How it Affects Those Who View it

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Signature Page

MISINFORMATION OF MENTAL HEALTH ON SOCIAL MEDIA AND HOW IT AFFECTS THOSE WHO VIEW IT

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Abstract

Social media's prevalence has grown through the years with 4.63 billion users around the world as of January 2022 (Global Social Media Stats). With the prevalence of social media, the question of the information, or in this case, the misinformation, that is on media platforms, especially about mental health, is one that needs to be brought to light. Mental health issues and disorders have become more of an open topic recently, and with the outreach on social media around mental health, the spread of misinformation can reach many audiences. This study analyzes just how potent the misinformation on mental health within a specific social media app, TikTok, is and how people's perceptions of that mental disorder change or vary due to the information. The research involves a survey through Qualtrics with two TikTok videos created by the researcher about the disorder Major Depression with both having a mix of misinformation and information. Each video has six statements that fall into specific categories about depression, with one video having the misinformation and the other having the correct information. The participants answered questions along the Likert scale about their belief of depression before and after the videos and were given the correct information at the end of the survey. The survey was sent out to UNC Greeley students through the SONA program and given to some professors to show to their class. The results with 73 UNC student respondents, showed that some already strong beliefs can be boosted while already weak beliefs can decrease no matter the information shown, but some beliefs can be drastically changed based off the information one sees through social media.

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Introduction

As social media use rises in today's society, how we perceive what we see on social media and the information we gather from it affects our everyday lives. There are many places on social media where the information or statements given are incorrect or have some form of misinformation within. For example, websites like Wikipedia, fake sites that are made to look like legitimate new sources, and social media platforms like Twitter, Instagram, and Facebook. This raises the question as to how we perceive that misinformation and what exactly happens when we learn that the information we have read is actually incorrect. One source stated that there has been recent evidence from research teams at the University of Chicago and Harvard University that have supported an account from Baruch Spinoza. This account is that "people appear to encode all new information as if it were true, even if only momentarily, and later tag the information as being either true or false" (Southwell, Brian G., Thomson, Emily A., Sheble, Laura, 2018). Another aspect of this all is the rising information of mental health on social media. Before social media and the internet, in order to get diagnosed with a mental disorder or even learn the different diagnostic criteria, you had to talk to a licensed therapist or someone who had a DSM. Today, that information is on the internet for everyone to see. The easily accessible information can create a multitude of misinformation problems as the information on diagnostic criteria and what it means to have a mental disorder can be interpreted incorrectly by someone who is not trained in the field of psychology. Although there are many sites with misinformation, there are a few that have accurate information that many consumers go to. Some of these sites are Mayo Clinic, the CDC, and Johns Hopkins to name a few. The purpose of this project is

to explore how non-psychologists perceive the information they gather about mental health disorders on social media platforms and how their perception of that information affects how they view mental health and those with disorders in their everyday lives.

Guiding research questions

How does misinformation of mental health viewed on social media affect the stereotypes, attitudes, and stigmas believed by those who have viewed the information? How do people's beliefs of a disorder change when they are given misinformation?

Social media is an ever-growing platform and everyone, or most everyone, is using some form of media platform in their current lives. Especially with the recent COVID pandemic social media usage increased and became more influential for some users. With this, the information that is disseminated through social media about mental health disorders and diagnoses can spread like wildfire. The information about mental health can also be highly incorrect or misinterpreted and create more stigmas and problems around those with mental health and the psychology community, or even create problems for those looking to ascertain help with their mental health for the first time.

It is hypothesized that the results of the study will be some significant differences in the pre-test and post-test of each video, dependent on the information given. It is believed by the researcher that with each false statement, the corresponding Likert statements will shift accordingly to the statement for each video. For example, for the statement in video one of *If you have cried yourself to sleep every night, or if you have been feeling sad all day for a few days, you most likely have depression* the corresponding Likert statements of *Depression is the feeling of being sad and lonely* to increase in a true belief (moving towards the 7 as the *very true* indication of the scale)

and *If you have been feeling sad for more than two weeks, gained or lost weight, had an increase or decrease in appetite, increased or decreased sleep, then you may have depression* to decrease in the belief (move towards the 1 as the *not true* indication of the scale).

Literature Review

As the world adjusts to the new normal of needing to stay inside of our homes and doing more online, the question is raised of how social media affects one's mental health. With the newest generation growing up completely within the social media world, a second question is raised regarding the information they are exposed to on social media, especially when it comes to mental health. As mental health becomes a more discussed topic both in mainstream media and on social media, there is more information online about different diagnoses, symptoms, and factors of mental health than ever before.

Today, there are many teens and young adults who look up their mental health symptoms and self-diagnose, which then makes them believe they have those mental disorders. This can become a problem, as they are taking what they read on the internet as fact and truth, even if it could be false. Especially with mental illnesses, one cannot take everything they read as truth and apply it to their own lives. Many different mental health disorders have very common symptoms that people can experience every day, like depression or anxiety. Understanding that people are over diagnosing themselves and possibly even reading misinformation about mental health raises the question of how the misinformation they are reading affects how they see themselves, others with mental disorders, and the other stigmas around mental health.

Social Media

As social media has become more prevalent throughout the years, with 4.63 billion social media users around the world as of January 2022 (Global Social Media Stats), the content on social media, especially media platforms like Facebook, Twitter, TikTok and more, have shifted. Social media is a widely used tool that many use for communication and connection. It is also widely used to gather information at the tips of our fingers, much like Google, Yahoo, and other search engines. Social media truly started as we know it in the early 2000's, according to Ortiz-Ospina (2019). Social media started out slow and through one main platform – Myspace. Myspace was the first social media site to reach one million active users, which was around 2004 (Ortiz-Ospina, 2019). As time has gone on, social media platforms have risen in popularity. As of 2019, there are 2.38 billion people using Facebook, 330 million using Twitter, and 291 million using Pinterest, along with billons of others using other platforms (Ortiz-Ospina, 2019).

Mental Health and Social Media

As more information goes online and as people spend more time online, there are more concerns for what that time does to one's mental health. Through the years, there have been many studies on how time spent online affects one's mental health. Many studies have investigated whether or not symptomology of mental illnesses correlates with time spent on social media (Banjanin et al., 2015; Boer et al., 2021; Frison & Eggermont, 2017; Suchland et al., 2022). Banjanin and colleagues (2015) mention that many different studies have suggested that internet use in general, as well as certain specific online activities such as social networking, may be associated with feelings of loneliness, low self-esteem, and depression (Banjanin et al., 2015, p. 308). Boer et al.

(2021) found that adolescents whose social media use (SMU) problems increased also reported an increase in depressive symptoms and decreased life satisfaction one year later. Those same SMU problems predicted increases in upward social comparisons and cybervictimization over time (Boer et al., 2021, p. 8).

One reason why SMU might correlate to mental health symptomology is because there is a higher risk of encountering negativity online than there is in person. One way of encountering this negativity is through cyberbullying or the use of digital devices to send, share, post, etc. negative, harmful, or mean content about someone else (US Department of Health and Human Services, 2021). The National Center for Education Statistics states that about 16% of students grades 9-12 reported being electronically bullied in 2019.

There has also been an increase in how much time children and even adults spend on social media, especially through the generations. Choudhury (2021) found that, according to Pew Research, only 5% of Americans were active on social media in 2005 whereas that number jumped to 50% in 2011 and even to 69% in 2019 (2021). Choudhury also found that the Baby Boomer generation are more likely to watch videos on social media platforms through YouTube and Facebook whereas Gen X tends to use media to online shop; Millennials tend to text and chat on social media than the other generations and Generation Z is a bit of a mix of everyone (2021). With how much time the newer generations spend on social media, the information that they see and how they process that information can take even more of a toll on their mental health. Looking specifically into social networking sites, there are a multitude of concerns that come from social networking specifically. Especially with Instagram, Snapchat, and TikTok being some of the top networking sites for adolescents and young adults to use frequently

(eMarketer, 2021). These groups of adolescents use social media as a pastime and to keep up with friends and celebrities that they follow. Frison and Eggermont (2017) found that browsing time on Instagram was related to a greater depressed mood and that depressed mood may be due to the large number of strangers that adolescents follow through Instagram (p. 606). Another study by Suchland et al. (2022) examined at how TikTok affected the mental health of a men's and women's soccer teams at one institution and found that TikTok had "several adverse effects on the mental health of most participants." Seeing as there is a multitude of how social media effects mental health, with about 4,830,000 results showing on Google Scholar as of August 31, 2022, it is imperative that we investigate the finer notes of just what social media does to the perceptions of mental health.

Concurrently, with the COVID-19 pandemic that has swept across the world, more and more people are spending time on social media and using it to communicate with those they have lost touch with and even to catch up on the news. Zhao and Zhou (2020) found that compared to the use of traditional media, young adults are more likely to use social media sources to attend to disaster-related coverage (p. 1030). This study found that disaster-related social media consumption is significantly associated with negative mental health, or as they define it, secondary traumatic stress, depression, and anxiety, and that the media exposure may even lead to heightened acute stress and long-term psychological distress.

Mental Health Information on Social Media

Even though the time spent on social media influences mental health, a second overlooked factor is the content of social media posts. The content people see on social

media can affect their mental health and help determine just what kind of information is being seen. For an example, Cavozos-Rehg et al. (2017) looked at depression, self-harm, and suicidal ideation content on Tumblr. They found that posts about self-loathing, loneliness/feeling unloved, and self-harm and/or scars from self-harm were the most popular observed themes on Tumblr out of 2,739 posts (Cavozos-Rehg et al., 2017, p. 48). This study also found that only about 8% of the almost 3,000 posts were comforting, supportive, or prevention posts. This helps to show just how much is out there on posts about mental health and approximately how many can be non-supporting or detrimental to those who read it.

When looking at the different communities and groups on social media sites, there are many different areas or sides of sites that not everyone will see. Many social media platforms use the information of what one likes, comments on, or spends the most time on to figure out how to revolve the content that is shown around the person viewing it (Jarboe, 2022). When looking at Instagram, one study found that Instagram-specific communities were a primary social group identified in post captions and hashtags. Lee et al. (2020) interpreted this as evidence that a primary motivation for creating and sharing this content is to feel connected to specific social groups. They also found that posts that discuss depression and anxiety have users that are likely to have peer-focused messages, such as support, testimony, and engagement (p. 135). This still raises the question of how the information in the posts affects those who saw them. Especially when it comes to who the content is coming from, many influential people on media platforms do not have degrees in mental health or are professionals in that area. A study done by Guidry et al. (2021) mentioned that more than 90% of the posts on Pinterest were from individuals and

appears to suggest that the public and mental health professionals' voices may be largely absent on Pinterest (p. 273). This could even go further onto other media platforms where many of the posts could be from individuals that gather the information and repost it in a way that is easy to understand but could be skewed and not correct.

Health Misinformation

To understand more about the misinformation and perceptions of those who see the misinformation about mental health, first, one must understand what misinformation is. Sherer et al. (2021) described, specifically health misinformation, as "a claim of fact that is false due to lack of evidence (p. 274)." Misinformation can be damaging as it is pervasive and threatens public health. Sherer also stated that health misinformation impedes the delivery of evidence-based medicine and negatively affects the quality of the patient-clinician relationships by making patients skeptical of guidelines and recommendations (p. 274). This can be damaging because as the clients read misinformation and believe it to be true, it can damage the relationship between the client and clinician. Due to this, the client can start to think that what the clinician is saying, from years of experience, is not true due to something the client has read or seen online. Misinformation in general makes people skeptical of what is fact or false. Once misinformation gets out, it is hard to retract those statements and teach someone the truth, especially if they have taken it as fact.

The continued influence of misinformation is apparent when it comes to the preexisting attitudes one holds, as shown in a study by Ecker et al. (2014). In this study, the results of looking at how those with different preexisting attitudes reacted to retractions of misinformation showed that the attitudes one holds are the major

determinant of the information people believe and use in their reasoning, be it the use of misinformation despite retractions or the (non)belief in empirical evidence and (non)support for actions on the basis of empirical evidence (Ecker et al., 2014, p. 301). Misinformation, though it was proven to be wrong, can still be believed and spread though the person believing it knows that it is false. This can create many problems, though there does seem to be a bit of hope. One study found that "retractions of worldview-congruent, negative misinformation were as effective as or even more effective than retractions of worldview-incongruent misinformation. That is, across both experiments, retractions of negative misinformation were at least as effective in depressive ruminators as they were in control participants, and they were more effective than retractions of positive misinformation in depressive ruminators (Chang et al., 2019, p. 1001)." The studies show that if the attitude and worldview of the participant is congruent with the misinformation, it is easier for that person to change their beliefs around that misinformation and correct it.

Misinformation on Social Media

Social media is a multitude of platforms for seeing content like posts that can include videos, pictures, and more. The content that we see on these different social media platforms can be attuned to what we would like to see, like how TikTok adjusts the videos on the For You Page to what the viewer has liked and spent the most time watching. As the content that one sees is shaped to how they view the world, the information seen in the posts can be taken as fact very easily. There is a danger that comes with this. As Wood (2021) stated, there is a concern of spreading that misinformation through these posts. This kind of health information was not as accessible

in the past as it is now, especially with Google searches and the information on social media sites, like TikTok. With the information being so accessible on social media, the question also rises of what if that information is wrong? As Morahan-Martin and Anderson mention in their article, the quality of the available online information varies as information on media is not regulated. “Psychologists, especially those working in mental health and educational settings, are finding that clients and students are increasingly turning to the internet for information. Unfortunately, many lack skills and experience to evaluate the accuracy of the information they find, which can have adverse consequences. (Morahan-Martin & Anderson, 2000, p.731).” As more and more young adults and teens use the internet and interact with this information, it becomes more concerning for the information they do see and if it is accurate or not.

Some people do not know how to look for the differences between misinformation and what the actual information is. Many different sources have tried to help with this as Scherer et al. (2021) referenced to research from Shaban (2018) and Bickert (2019) with how Google had altered its search engine algorithm to prioritize reputable health websites and Facebook had made vaccine misinformation more difficult to find on their platform (p. 275). Although this is true, there are many who still share the misinformation they see, willingly or unwillingly. The Pew Research Center (2016) found that “16% of U.S. adults say they have shared fake political news inadvertently, only discovering later that it was entirely made up… A similar percentage, 14%, say they have shared fake news they *knew* was made-up (p.8).” Sharing fake news, or misinformation, either advertently or inadvertently can hinder those looking for the

proper information and undermine what sites have done to stop the spread of misinformation.

Conclusion

As social media is used more and more, the prevalence of the amount of misinformation and how people interpret that misinformation has risen and become more of a problem. There are many different studies on mental health on social media, studies on health information/misinformation, and misinformation on social media, but there were not any studies on mental health misinformation on social media. As social media takes more prevalence and affects how people view the world and those around them and as mental health becomes more of a topic that is talked about, there should be more research done on the different aspects of mental health and social media, especially down the misinformation rout as there are always those going around spreading information that they may believe to be true that is actually false or intentionally sharing false information, as seen in the study done by the Pew Research Center (2016).

Method

Participants

The participants were obtained through convenience sampling; all were college students from the University of Northern Colorado obtained through the introductory psychology participant pool through the School of Psychological Sciences, as well as a few participants from other classes in which the researcher is enrolled. There were 73 usable responses.

Measures/Materials

A set of 12 statements were created for use in this study. To create the 12 statements, 6 different aspects of depression were identified, including: 1. Prevalence of depression, 2. Symptomology, 3. Etiology (genetics), 4. Gender differences, 5. Etiology (triggers), and 6. Treatment. Then, for each domain, a true statement and a false statement were created. For example, for the domain of treatment, the two statements were *Depression is primarily treated by taking medications* (false) and *Depression can be treated in a multitude of ways like therapy, medications, and medical treatments* (true). (See Appendix B for a list of all statements used in the present study.) The 12 statements were then divided into 2 separate sets of 6 statements; each set of 6 statements included one statement about each of the six domains, and half were true statements whereas the other half were false statements.

Two different videos were created for use in this study; both videos were brief and were created to mimic those on TikTok (the TikTok logo appeared on the video). In each video, an individual (the researcher) presented (as truth) 6 statements about depression; the only difference between the two videos was the set of 6 facts that were

presented. Thus, across subjects, each statement was presented as a fact in a video, regardless of whether it was true or false.

A pre-test was also created to gauge participants' belief in each of the 12 statements. For the survey, each statement was listed and was paired with a 7-option Likert scale. For most questions, 1 was deemed *not true* and 7 as *very true*, for prevalence questions, the 7 options were percentages in increments of 10 (e.g., 0-10%).

Procedure

The experiment was conducted online using the Qualtrics platform. After obtaining informed consent, participants were presented with the 12 statements of depression, and rated each statement on a 1 to 7 scale with 1 indicating that the participant did not believe the statement was true, and 7 indicating that the participant strongly believed the statement was true.

After completing the pre-test, participants were randomly assigned to watch one of the two videos, which included 6 statements on depression, with half of the statements true and the other half false. Each video lasted approximately 1 minute. After viewing the video, participants were asked to indicate the believability of each of the 6 statements from their assigned video (and to explain why they believed the statements were true or false). Finally, participants completed a post-test, which was identical to the pre-test.

The end of the survey consisted of a debriefing statement to make sure that participants did not leave the survey believing incorrect information.

Design

Because of the somewhat exploratory nature of this study, each of the twelve statements was examined individually. Each statement was analyzed with a 2 x 2 mixed

factorial ANOVA, with the between-subjects factor of video (video 1, video 2) and the within-subjects factor of time (pre-test, post-test). The dependent variable was Liker scale score (which ranged from 1-7, with lower scores indicating less believability and higher scores indicating greater believability.

Results

Statement 1 (how prevalent do you believe depression is?).

There were no differences between video 1 (M = 5.069) and video 2 (M = 4.703), F (1, 71) = 1.070, MSE = 4.586, p = .304. There was a decrease from pre-test (M = 5.263) to post-test (M = 4.509), F (1, 71) = 12.076, MSE = 1.715, p < .001. The interaction between video and pre/post-test was not significant, indicating that decrease from pre-test to post-test was statistically equivalent for both groups, F(1, 71) = 0.00, MSE = 1.715, p = .998 (Video 1: pre-test (M=5.444), post-test (M=4.694); Video 2: pre-test (M=5.081), post-test (M=4.324)). The decrease indicates that viewers of both videos decreased their estimates of the prevalence of depression after viewing the video.

Statement 2 (To be diagnosed with depression, the symptoms must last at least two weeks; True).

Overall, there were little differences between video 1 (M = 4.444) and video 2 (M = 4.824), F (1, 71) = .956, MSE = 5.507, p = .331, for question two, which stated that symptoms must last at least two weeks to be diagnosed. There was an increase from pre-test (M = 4.397) to post-test (M = 4.872), F (1, 71) = 5.973, MSE = 1.403, p =.018. The interaction between video and pre/post-test was not significant, indicating that increase from pre-test to post-test was statistically equivalent for both groups, F (1, 71) = 2.476, MSE = 1.403, p = .120 (Video 1: pre-test (M=4.361), post-test (M=4.528); Video 2: pre-

test (M=4.432), post-test (M=5.216)). Although the interaction was not significant, it is noteworthy that the statement 2 was presented in video 2, and there was (numerically) a greater increase from pre-test to post-test for video 2 than for video 1.

Statement 3 (Depression is the feeling of being sad and lonely; False)

Again, there were no significant differences between video 1 (M = 3.681) and video 2 (M = 3.635), F (1, 71) = .016, MSE = 4.589, p = .898. There was a decrease from pre-test (M = 4.026) to post-test (M = 3.290), F (1, 71) = 11.942, MSE = 1.652, p < .001. The interaction between condition and pre/post-test was not significant, indicating that decrease from pre-test to post-test was statistically equivalent for both groups, F (1, 71) = 2.243, MSE = 1.652, p = .139 (Video 1: pre-test (M=3.889), post-test (M=3.472); Video 2: pre-test (M=4.162), post-test (M=3.108)).

Statement 4 (If you have been feeling sad for more than two weeks, gained or lost weight, had an increase or decrease in appetite, increase, or decrease sleep, then you may have depression; True)

There were no overall differences between video 1 (M = 6.361) and video 2 (M = 6.405), F (1, 71) = .040, MSE = 1.795, p = .842 in believability. There was an (non-significant) increase from pre-test (M = 6.355) to post-test (M = 6.411), F (1, 71) = .187, MSE = .603, p = .667. The interaction between condition and pre/posttest was not significant, indicating that increase from pre-test to post-test was statistically equivalent for both groups, F (1, 71) = .187, MSE = .603, p = .667 (Video 1: pre-test (M=6.306), post-test (M=6.417); Video 2: pre-test (M=6.405), post-test (M=6.405)). Note that the highest possible score is 7, so subjects strongly agreed with this statement both before viewing the video as well as after.

Statement 5 (Depression can be passed through genetics, especially if they are within your immediate family – parent, sibling, etc.; True)

There were no overall differences between video 1 (M = 5.361) and video 2 (M = 5.216), F (1, 71) = .164, MSE = 4.678, p = .687. There was an increase from pre-test (M = 5.071) to post-test (M = 5.506), F (1, 71) = 4.477, MSE = 1.640, p = .038. The interaction between video and pre/post-test was not significant, indicating that increase from pre-test to post-test was statistically equivalent for both groups, F (1, 71) = 1.1702, MSE = 1.540, p = .196 (Video 1: pre-test (M=5.278), post-test (M=5.444); Video 2: pre-test (M=4.865), post-test (M=5.568)). Although the interaction was not significant, it is noteworthy that the statement 5 was presented in video 2, and there was (numerically) a greater increase from pre-test to post-test for video 2 than for video 1.

Statement 6 (If someone in your family has depression, you are almost guaranteed to also have depression; False)

There were significant differences between video 1 (M = 3.500) and video 2 (M = 2.770), F (1, 71) =5.025, MSE = 3.868, p = .028. There was an increase from pre-test (M = 2.795) to post-test (M = 3.475), F (1, 71) = 7.818, MSE = 2.155, p = .007. The interaction between video and pre/post-test was significant, indicating that increase from pre-test to post-test was statistically significant for one group, F (1, 71) = 6.063, MSE = 2.155, p = .016 (Video 1: pre-test (M=2.861), post-test (M=4.139); Video 2: pre-test (M=2.730), post-test (M=2.811)). Note that the lowest score is 1, so subjects strongly disagreed with this statement for both videos in the pre-test, though video 1, which stated this information as true, had a significant increase in the post-test, unlike video 2.

Statement 7 (How prevalent do you think depression is in women?)

Overall, there were no differences between video 1 (M = 4.542) and video 2 (M = 4.770), F (1, 71) = .401, MSE = 4.760, p = .529. There was a decrease from pre-test (M = 4.861) to post-test (M = 4.451), F (1, 71) = 6.736, MSE = .912, p =.011. The interaction between condition and pre/post-test was not significant, indicating that decrease from pre-test to post-test was statistically equivalent for both groups, F(1, 71) = .097, MSE = .912, p = .757 (Video 1: pre-test (M=4.722), post-test (M=4.361); Video 2: pre-test (M=5.000), post-test (M=4.541)). Although the interaction was not significant, it is noteworthy that the statement 7 was indirectly presented in video 2, and there was (numerically) a greater decrease from pre-test to post-test for video 2 than for video 1.

Statement 8 (How prevalent do you think depression is in men?)

There were significant differences between video 1 (M = 4.903) and video 2 (M = 4.135), F (1, 71) = 5.348, MSE = 4.021, p = .024, with video 1 eliciting stronger belief than video 2. There was a decrease from pre-test (M = 4.854) to post-test (M = 4.184), F (1, 71) = 11.804, MSE = 1.385, p < .001. The interaction between condition and pre/post-test was not significant, indicating that decrease from pre-test to post-test was statistically equivalent for both groups, F (1, 71) = .528, MSE = 1.385, p = .470 (Video 1: pre-test (M=5.167), post-test (M=4.639); Video 2: pre-test (M=4.541); post-test (M=3.730)). It is noteworthy that statement 8 was presented in video 2, and there was (numerically) a greater decrease from pre-test to post-test for video 2 than for video 1.

Statement 9 (Depression is triggered from many different life events, like stress, grief, loss, etc.; True)

There were no differences between video 1 (M = 6.194) and video 2 (M = 6.135), F (1, 71) = .066, MSE = 1.943, p = .798. There was a numerical increase from pre-test (M = 6.069) to post-test (M = 6.261), F (1, 71) = 2.458, MSE = .544, p = .121. although the increase was not significant. The interaction between condition and pre/post-test was not significant, indicating that decrease from pre-test to post-test was statistically equivalent for both groups, F (1, 71) = .041, MSE = .544, p = .840 (Video 1: pre-test (M=6.111), post-test (M=6.278); Video 2: pre-test (M=6.027), post-test (M=6.243)). Note that the highest possible score is 7, so subjects strongly agreed with this statement both before viewing the video as well as after.

Statement 10 (Depression is primarily triggered from large traumatic events; False)

Overall, there were significant differences between video 1 (M = 4.292) and video 2 (M = 3.405), F (1, 71) = 6.144, MSE = 4.665, p = .016. There was a significant decrease from pre-test (M = 4.123) to post-test (M = 3.574), F (1, 71) = 6.117, MSE = 1.799, p = .016. The interaction between condition and pre/post-test was significant; the interaction is a crossover because for video 1 (in which statement 12 was not presented), agreement with the statement slightly increased from pre-test to post-test, whereas for video 2 (in which statement 12 was presented), agreement decreased from pre-test to post-test, F (1, 71) = 16.806, MSE = 1.799, p <.001 (Video 1: pretest (M=4.111), posttest (M=4.472); Video 2: pretest (M=4.135), posttest (M=2.676)).

Statement 11 (Depression is primarily treated by taking medications; False)

There were overall little differences between video 1 (M = 3.569) and video 2 (M = 3.176), F (1, 71) = 1.525, MSE = 3.709, p = .221. There was a significant decrease from pre-test (M = 3.835) to post-test (M = 2.910), F (1, 71) = 18.826, MSE = 1.660, p < .001. The interaction between video and pre/post-test was significant, indicating that decrease from pre-test to post-test was statistically significant for one group, F (1, 71) = .037, MSE = 1.660, p = .037 (Video 1: pre-test (M=3.806), post-test (M=3.333); Video 2: pre-test (M=3.856), post-test (M=2.486)). Statement 11 was presented in video 2, and that there was a larger decrease from pre-test to post-test in video 2 than video 1

Statement 12 (Depression can be treated a multitude of ways like therapy, medications, and medical treatments; True)

There were no differences between video 1 (M = 6.500) and video 2 (M = 6.311), F (1, 71) = .661, MSE = 1.977, p = .419. There was an increase from pre-test (M = 6.301) to post-test (M = 6.509), F (1, 71) = 6.214, MSE = .250, p = .015. The interaction between video and pre/post-test was not significant, indicating that increase from pre-test to post-test was statistically equivalent for both groups, F (1, 71) = .742, MSE = .250, p = .392 (Video 1: pre-test (M=6.361), post-test (M=6.639); Video 2: pre-test (M=6.243), post-test (M=6.378)). Note that the highest score possible is a 7, indicating that participants strongly agreed with statement 12.

Statement Believability

After each video, the respondents were asked to rate how true they believed each statement (6 statements that were said to be true) from the video to be and were asked to separate which statements they believed to be true and which they believed to be false.

The respondents were also asked to state why they believed what they had put as true and false.

Of the 73 responses, 4 said that all of the statements in the video they watched were true, 11 said that 5 out of 6 were true, 30 said 4 of 6 were true, 19 said half were true, 5 said that only 2 were true, and 2 respondents said that only one statement was true. There were also 2 respondents that did not respond to the question of what they believed to be true or false. Many of the respondents stated that they believed what was true due to their own experience or what they have learned in class or from research. Though, there were 7 respondents that said they believed what they had put as true due to the video they had watched. There was also one respondent that said they believed all of the statements were true but did not indicate if they believed them due to the video. They had only said that the statements sounded true.

Table 1. Count of participants who believed and did not believe each of the 12 statements by video. Refer to appendix c for the statements the participants ranked for the table below.

	Video 1	
	Believed	Did not believe
Statement 1	22	13
Statement 2	11	24
Statement 3	18	17
Statement 4	13	22
Statement 5	35	0
Statement 6	34	1

	Video 2	
	Believed	Did not believe
Statement 1	32	4
Statement 2	31	5
Statement 3	29	7
Statement 4	24	12
Statement 5	4	32
Statement 6	15	21

Discussion

The original hypothesis was that there would be a significant increase or decrease in agreement with statements from pre-test to post-test when those statements were presented as facts in a social-media style video. It was also predicted that there should be little to no change in agreement with statements when they were not presented as facts in the video. There were a few specific statements that demonstrated a change from the pre-test to the post-tests, meaning that for those statements, the belief of those who answered decreased from pre-test to post-test. This means that, given the information in the video, the participants' belief either became more neutral if they started with a belief of the statement being true, or the belief changed from a more neutral standing to a belief that the statement was not true.

Statement 1, which addresses the prevalence of depression, had significant decreases for both videos, no matter what the viewers were told. A similar result was found for statement 8, which addresses the prevalence of depression in men. One video

stated that the prevalence of depression is equal in men and women whereas the other stated that the prevalence was lower in men than in women. Both videos had a decrease between pre- and post-test, though video 1 went from a belief of being true to a neutral stance, and video 2 went from a neutral stance to a belief of it not being true. It was interesting to see that both videos decreased in their beliefs regardless of the facts given in each video. Similar results were found for statement ten, which asserts depression is primarily triggered by traumatic events; when this (false) statement was presented as truth in the assigned video, belief in the statement still decreased. Another example of this was for statement eleven, which states that depression is primarily treated by taking medications. When this false statement was presented as a fact in the video, belief in the statement still decreased. This was fascinating as, even though they were told that the information they heard was true, their stance became stronger in their belief of it not being true. Thus, these results suggest that either participants were able to deduce what was misinformation and adjusted their beliefs accordingly, or possibly that because the statement might have contradicted their beliefs, they more strongly rejected it.

On the other hand, there were a few statements that demonstrated the predicted increase in belief after being presented as fact in the video. Statement 2, which touches on the symptoms of depression, showed an increase from pre-test to post-test when it was presented as fact in the video. This was significant as they were told that this information they were receiving was true and that was reflected in the responses. The two other statements that demonstrated this increase were statement 5 and statement 6, both of which address the genetic etiology of depression. Statement 5 accurately suggests that depression can be passed through genetics where statement 6 falsely suggests that you are

almost guaranteed to have depression if someone in your family also has depression. When the video presented to subjects suggested that the statement was true, belief in the statement increased, even when the statement was false (statement 6). Thus, at least in the case of the underlying causes of depression, when a statement is asserted in a social media video, belief in that statement increases, even if the statement is false.

Another aspect that was examined was the qualitative question after the participants watched the videos. There was a short survey after each video that had the participants respond as to how true they believed each statement in the video. One aspect of those questions was interesting as out of the 73 responses, 7 of those respondents said that they believed what they did because of the video they had watched. This is significant as the researcher had hypothesized that there would be a small group that would take what they had viewed as fact and completely believed the video. Of these responses, only two of those that had said they believed the video put all of the facts as true, though the others put either 5 out of 6 or 4 out of 6.

Conclusion

Although it was only a few statements that showed significant increases or decreases in belief that followed with the information given in the videos, it is still interesting to obtain this result. The qualitative statements that a few of the respondents expressed as to why they believed what they did falls into what Southwell, Thomson, and Sheble had stated in their article where there had been evidence found for the idea from Baruch Spinoza where people tend to just believe what they see initially. These differences show that although much of the misinformation out there may be identified as misinformation, there are still some areas for which beliefs about mental health may be

influenced by social media, even if in a detrimental way. Most of this could be due to the pre-existing attitudes that Ecker et al. through their study in 2018. Because of the widespread of misinformation, the accessibility, and the damage it could have on peoples beliefs, it is important to fact check what one sees on social media as many people just believe anything they see on the internet and take it as a hard, true fact.

Limitations of Study

This study has limitations. One of these limitations is the population of the study. This study was conducted only on college students, specifically psychology students, at the University of Northern Colorado, most of whom are freshman. The participants of this study were obtained using convenience sampling and do not represent the population as a whole. Because many of the participants were psychology students, it is possible that they have some previous knowledge of depression. For future studies, it could be suggested to broaden the population to more age demographics and to those outside of the psychology community to get more of a general population consensus.

Another limitation to this study was the wording and organization of the survey questions. Some of the questions were not transferred from the pre-test to the post-test correctly and had a few differences which could have affected the responses to the questions. Many of the questions also had their counter question right above or below, so many participants could have made sure to make their responses were different or even make them the same. Another aspect of this also ties in with the population, as many responses were not fully finished or had only been partially finished, so those answers could not be recorded.

Future Study Ideas

There were many things that could have been done differently for this study. Some ideas for differences would be to gather more responses with a wider population instead of just undergraduate psychology majors at the University of Northern Colorado. Having a wider range of people outside of the psychology community could help to generalize to the general population to see the effects of misinformation on social media for everyone. It would also be interesting to see if different media affects the significance of the relationship between the pre- and post-test. Looking at other popular medias like Instagram, Twitter, Tumblr, and others would be interesting to see if the more text-based information also changes the way the misinformation is received.

The original idea for this study was to see how the misinformation being corrected verses not being corrected would change people's perceptions. It would be fascinating to take this study but change the layout so that there was a way to record how the respondents' beliefs change after receiving correcting information. This would be interesting to measure so that we could look to see if the information could be corrected and how effective that could be so that there are ways to combat the misinformation throughout social media.

Appendices

Appendix A: Consent Form for Human Participants in Research
University of Northern Colorado

Project Title: Misinformation of Mental Health on Social Media and How it Affects those Who view it

Researcher: Kathryn Johnson, BA, School of Psychological Sciences
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Advisor: James Kole, Ph.D., School of Psychological Sciences
Phone: (970) 351-2422 Email: james.kole@unco.edu

Purpose and Description: The purpose of this research is to look further into how information regarding mental health on social media affects one's perception of mental health round them and changes after viewing that information. Upon agreement, you will be asked self-identifying questions and then assigned to watch one video. After watching said video, you will then be asked some questions about your views towards the information in the video. After that initial survey is completed, you will then read more information on the same topic as the video and will be asked to voice how your perceptions changed, if at all, through a secondary survey.

Through this experiment, we will not be given any identifiers, other than identified gender, age, and school year. We will take every precaution to ensure confidentiality. Only the researcher and advisor will have access to the results and answers for these questions. Data collected and analyzed for this study will be kept on a private USB drive, locked within a lockbox within the researcher's apartment, which is only accessible to the researcher, and the advisor when needed. Your participation in this research does not have any known economic, legal, physical, psychological, or social risks in either immediate or long-term outcomes.

Participation is voluntary. You may decide not to participate in this study and if you begin participation, you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in any repercussions. Having read the above, please clock the next button below if you would like to participate in this research. A copy of this form will be given to you to retain for future references, or you may screenshot this page for reference. If you have any concerns about his research as a participant, please contact James Kole, Associate Professor of Psychological Sciences, University of Northern Colorado, Greeley, CO; (970) 351-2422 or james.kole@unco.edu -or- Kathryn Johnson, BA of Psychological Sciences, University of Northern Colorado, Greeley, CO; (719) 237-0814 or john3335@bears.unco.edu -or- Nicole Morse, IRB Administrator, Office of Sponsored Programs, Kepner Hall, University of Northern Colorado, CO; (970) 351-1910 or Nicole.morse@unco.edu.

If you are a participant coming from PSY 120, by clicking the next arrow, you are stating that you understand that participation in this study is only one way to satisfy the research experience requirement for your PSY 120 class and you may, if you choose, select an alternative assignment to being a research participant.

Appendix B: Survey Questions

Identifying Questions

- Indicate your gender identity:
- What year are you in college?

Pre-test/Post-test:

- How prevalent do you believe depression is? (1 – 0-10%, 2 – 10-20%, 3 – 20-30%, 4 – 30-40%, 5 – 40-50%, 6 – 50-60%, 7 – 60-70%)
- To be diagnosed with depression, the symptoms must last at least two weeks (1 – not true, 7 – very true)
- Depression is the feeling of being sad and lonely (1 – not true, 7 – very true)
- Depression has a multitude of symptoms like loss of appetite or increase of appetite, increased or decreased sleep, weight gain or weight loss, and more (1 – not true, 7 – very true)
- Depression can be passed through genetics, especially if they are within your immediate family – parent, sibling, etc. (1 – not true, 7 – very true)
- If someone in your family has depression, you are almost guaranteed to also have depression (1 – not true, 7 – very true)
- On a scale from 1-7, how prevalent do you think depression is in women? (1 – 0-10%, 2 – 10-20%, 3 – 20-30%, 4 – 30-40%, 5 – 40-50%, 6 – 50-60%, 7 – 60-70%)
- On a scale from 1-7, how prevalent do you think depression is in men? (1 – 0-10%, 2 – 10-20%, 3 – 20-30%, 4 – 30-40%, 5 – 40-50%, 6 – 50-60%, 7 – 60-70%)
- Depression is triggered from many different life events, like stress, grief, loss, etc. (1 – not true, 7 – very true)
- Depression is primarily triggered from large traumatic events (1 – not true, 7 – very true)
- Depression is primarily treated by taking medications (1 – not true, 7 – very true)
- Depression can be treated a multitude of ways like therapy, medications, and medical treatments (1 – not true, 7 – very true)

Video One Specific:

- Depression is a very common mental disorder; it is estimated that 5% of adults suffer from depression (1 – not true, 7 – very true)
- If you have cried yourself to sleep every night, or if you have been feeling sad all day for a few days, you most likely have depression (1 – not true, 7 – very true)
- Studies have shown that someone with a first-degree relative diagnosed with depression (parent, sibling, child) is almost guaranteed to be diagnosed with depression at some point in their lifetime (1 – not true, 7 – very true)
- Men and women are equally likely to be diagnosed with depression (1 – not true, 7 – very true)
- Depression has different triggers: from stressful life events, if they've had depression in the past, grief and loss, rejection, and so many more (1 – not true, 7 – very true)
- Treatment is not "one size fits all." It is usually a mid of medication and therapy and sometimes takes multiple tries to find what works for you (1 – not true, 7 – very true)

- What information from the video do you believe is true? What information from the video do you believe is NOT true?
- What makes you believe this information is true or false?

Video 2 Specific:

- Depression is a very common mental disorder; it is estimated that 10% of adults suffer from depression (1 – not true, 7 – very true)
- If you have been feeling sad for more than two weeks, gained or lost weight, had an increase or decrease in appetite, increased or decreased sleep, then you may have depression (1 – not true, 7 – very true)
- Some studies have shown that someone with first-degree relatives (a parent, sibling, or child) that is diagnosed with depression could be three times more likely to be diagnosed with depression in their lifetime (1 – not true, 7 – very true)
- Men are less likely to be diagnosed with depression than women (1 – not true, 7 – very true)
- Depression is triggered solely by traumatic events (1 – not true, 7 – very true)
- Treatment involves testing different anti-depressive medications and finding the one that most effectively treats symptoms (1 – not true, 7 – very true)
- What information in the video do you believe is true? What information do you believe is NOT true? What makes you believe these facts are true or false?

Appendix C: TikTok Video Script

Misinformation Video 1:

Intro: Here are six facts about depression, you might not have known.

1. Depression is a very common mental disorder; it is estimated that 5% of adults suffer from depression.
2. If you have cried yourself to sleep every night, or if you have been feeling sad all day for a few days, you most likely have depression.
3. Studies have shown that someone with a first-degree relative (a parent, sibling, or child) diagnosed with depression is almost guaranteed to be diagnosed with depression at some point in their lifetime.
4. Men and women are equally likely to be diagnosed with depression.
5. Depression has different triggers, like stressful life events, having had depression in the past, grief and loss, rejection, and so many more.
6. Treatment is not "one size fits all." It's usually a mix of medication and therapy and sometimes takes multiple tried to find wat works for you.

Misinformation Video 2:

Intro: Here are six facts about depression, you might not have known,

1. Depression is a very common mental disorder; it is estimated that 10% of adults suffer from depression.
2. If you have been feeling sad for more than two weeks, gained or lost weight, had an increase or decrease in appetite, increased or decreased sleep, then you may have depression.

3. Some studies have shown that someone with a first-degree relative (parent, sibling, child) diagnosed with depression could be three times more likely to be diagnosed with depression in their lifetime.
4. Men are less likely to be diagnosed with depression than women.
5. Depression is triggered solely by traumatic events.
6. Treatment involves testing different anti-depressive medications and finding the one that most effectively treats symptoms.

Appendix D: Debriefing Statement

This study was designed to examine the effect of misinformation on the perception on mental health disorders. In this experiment, you viewed a TikTok video that included both correct and incorrect information about Major Depressive Disorder (MDD). After words, you completed a survey to assess your beliefs about MDD. This survey allows us to test how much an effect misinformation has on the perceptions of MDD.
The correct information on MDD is:
- Depression is a very common mental disorder; it is estimated that 5% of adults suffer from depression.
- Depression has different triggers: from stressful life events, if they've had depression in the past, grief and loss, rejection, and so many more.
- Treatment is not "one size fits all." It is usually a mix of medication and therapy and sometimes takes multiple tries to find what works for you
- If you have been feeling sad for more than two weeks, gained or lost weight, had an increase or decrease in appetite, increased or decreased sleep, then you may have depression.
- Some studies have shown that someone with a first-degree relative diagnosed with depression (parent, sibling, child) could be three times more likely to be diagnosed with depression in their lifetime.
- Experts believe that about 50% of depression stems from genetics.
- Men are less likely to be diagnosed with depression than women.

Thank you for your participation.

Appendix E: IRB Approval

UNIVERSITY OF
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Institutional Review Board

Date: 05/03/2022
Principal Investigator: Kathryn Johnson

Committee Action: **IRB EXEMPT DETERMINATION – New Protocol**

Action Date: 05/03/2022

2204037798
Protocol Number:
Protocol Title:
Misinformation of Mental Health on Social Media and How it Affects those Who View it
Expiration Date:
The University of Northern Colorado Institutional Review Board has reviewed your protocol and determined your project to be exempt under 45 CFR 46.104(d)(702) for research involving Category 2 (2018): EDUCATIONAL TESTS, SURVEYS, INTERVIEWS, OR OBSERVATIONS OF PUBLIC BEHAVIOR. Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: (i) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; (ii) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or (iii) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by 45 CFR 46.111(a)(7).

You may begin conducting your research as outlined in your protocol. Your study does not require further review from the IRB, unless changes need to be made to your approved protocol.

As the Principal Investigator (PI), you are still responsible for contacting the UNC IRB office if and when:

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

- You wish to deviate from the described protocol and would like to formally submit a modification request. Prior IRB approval must be obtained before any changes can be implemented (except to eliminate an immediate hazard to research participants).
- You make changes to the research personnel working on this study (add or drop research staff on this protocol).
- At the end of the study or before you leave The University of Northern Colorado and are no longer a student or employee, to request your protocol be closed. *You cannot continue to reference UNC on any documents (including the informed consent form) or conduct the study under the auspices of UNC if you are no longer a student/employee of this university.

• You have received or have been made aware of any complaints, problems, or adverse events that are related or possibly related to participation in the research.
If you have any questions, please contact the Research Compliance Manager, Nicole Morse, at 970-351-1910 or via e-mail at nicole.morse@unco.edu. Additional information concerning the requirements for the protection of human subjects may be found at the Office of Human Research Protection website - http://hhs.gov/ohrp/ and https://www.unco.edu/research/research-integrity-and- compliance/institutional review-board/.
Sincerely,

Nicole Morse
Research Compliance Manager

University of Northern Colorado: FWA00000784

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